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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Andreas Barth

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EXAMINER

ROE, JESSEE RANDALL

ART UNIT

PAPER NUMBER

1793

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/580,896	Applicant(s) BARTH, ANDREAS	
	Examiner Jessee Roe	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 August 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11-25 is/are rejected.
- 7) ☒ Claim(s) 15 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 May 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>1 August 2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Status of the Claims

Election of Group I, claims 11-22, drawn to a process for producing a drop forged alloy containing 80 wt% or more Ti and/or Zr and/or Hf, was made with traverse in the reply filed 20 August 2008. The Examiner finds the Applicant's arguments with respect to the restriction requirement persuasive. Accordingly, the Groups I and II inventions indicated in the Office Action of 31 July 2008 have been rejoined and have been examined together. Claims 11-25 are under examination.

Drawings

New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because of the poor drawing quality of Figs. 1 and 3. Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

Claim Objections

Claim 15 is objected to because of the following informalities: "600-700 C" should be amended to be "600-700°C". Appropriate correction is required.

Art Unit: 1793

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 14-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 14 recites the limitation "the material" in claim 14. There is insufficient antecedent basis for this limitation in the claim.

Claim 15 recites the limitation "the relaxation thermal treatment". There is insufficient antecedent base

Claim Rejections - 35 USC § 102/103

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 23 and 25 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Serfozo et al. (US 4,055,975).

In regards to claims 23 and 25, Serfozo et al. ('975) discloses forging a Ti-6Al-4V alloy rod (which would have greater than 80 weight percent titanium) (col. 3, lines 1-62).

With respect to the recitation "heating, during deforming, within the range of 5-15°C above the α/β phase boundary to form β phases; and subsequently cooling" of claim 23, the Examiner notes that the claim is directed to a product and not a process. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. MPEP 2113. Furthermore, Serfozo et al. ('975) discloses forging a Ti-6Al-4V alloy while at a temperature of approximately 1200°F -1950°F (col. 3, lines 1-62) and cooling (col. 7, lines 1-10), which would be the same or a process substantially similar to that of the instant invention. Thus, the formation of β phases would be expected. MPEP 2112.01 I.

With respect to the recitation "heating, during deforming, within the range of 5-15°C above the α/β phase boundary to form β phases; and subsequently cooling in such a manner that the E-modulus is increased" of claim 25, the Examiner notes that the claim is directed to a product and not a process. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of

Art Unit: 1793

production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. MPEP 2113. Furthermore, Serfozo et al. ('975) discloses forging a Ti-6Al-4V alloy while at a temperature of approximately 1200°F - 1950°F (col. 3, lines 1-62) and cooling (col. 7, lines 1-10), which would be the same or a process substantially similar to that of the instant invention. Thus, the formation of β phases and an increased E-modulus would be expected. MPEP 2112.01 I.

Claims 23-25 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Kusano et al. (US 6,077,369).

In regards to claims 23-25, Kusano et al. ('369) discloses processing a Ti-6Al-4V alloy used for engine valves.

With respect to the recitation "heating, during deforming, within the range of 5-15°C above the α/β phase boundary to form β phases; and subsequently cooling" of claim 23, the Examiner notes that the claim is directed to a product and not a process. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. MPEP 2113.

Art Unit: 1793

With respect to the recitation “heating, during deforming, within the range of 5-15°C above the α/β phase boundary to form β phases; and subsequently cooling in such a manner that the E-modulus is increased” of claim 25, the Examiner notes that the claim is directed to a product and not a process. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. MPEP 2113.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Serfozo et al. (US 4,055,975).

In regards to claim 11, Serfozo et al. ('975) discloses forging a Ti-6Al-4V alloy while at a temperature of approximately 1200°F -1950°F (col. 3, lines 1-62), which overlaps the temperature range of the instant invention, and cooling (col. 7, lines 1-10).

Claims 12-13 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Serfozo et al. (US 4,055,975) as applied to claims 11 and 23 above, and further in view of Adams et al. (US 5,342,458).

In regards to claims 13 and 24, Serfozo et al. ('975) discloses a Ti-6Al-4V alloy rod as described above, but Serfozo et al. ('975) does not specify that the rod would be used as a connecting rod.

Adams et al. ('458) discloses using the Ti-6Al-4V alloy as a connecting rod in automotive applications in order to increase fuel efficiency and correspondingly lower the operating costs of motor vehicles (col. 1, lines 16-39).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the Ti-6Al-4V rod, as disclosed by Serfozo et al. ('975), for automotive applications such as a connecting rod, as disclosed by Adams et al. ('458), in order to increase fuel efficiency and lower the operating costs of motor vehicles, as disclosed by Adams et al. ('458) (col. 1, lines 16-39).

In regards to claim 12, the Examiner asserts that a connecting rod would be a moving part in a motor.

Claims 11-17 and 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kusano et al. (US 6,077,369).

In regards to claim 11-15, Kusano et al. ('369) discloses processing a Ti-6Al-4V alloy used for engine valves, which would be a moving part of a motor, wherein the alloy would be forged; hot straightened at a temperature in the range of 600-1000°C, which

Art Unit: 1793

overlaps the range of heating within the range of 5-15°C above the α/β phase boundary; annealed for 1 hour (60 minutes) at a temperature in the range of 600-1000°C, which overlaps the temperature range of the instant invention (Example 4). Kusano et al. ('369) further discloses cooling the rod while applying a tension after straightening (claim 3).

With respect to the recitation "to form β phases" as recited in line 4 of claim 11, the Examiner notes that Kusano et al. ('369) discloses processing the alloy in the same or a substantially similar manner. Therefore, the formation of β phases would be expected. MPEP 2112.01 I.

With respect to the recitation "wherein the E-modulus and the rigidity of the Ti and/or Zr and/or Hf containing materials, or alloys thereof, are increased" of claim 16, the Examiner notes that Kusano et al. ('369) discloses processing the alloy in the same or a substantially similar manner. Therefore, the an increased E-modulus and rigidity would be expected. MPEP 2112.01 I.

In regards to claim 17, Kusano et al. ('369) also discloses processing Ti-6Al-2Sn-4Zr-6Mo alloys, which would contain greater than 80 weight percent titanium and 4 weight percent zirconium (col. 3, lines 14-24).

In regards to claims 19-20, Kusano et al. ('369) discloses processing Ti-6Al-4V alloys, which would contain 90 weight percent titanium (col. 3, lines 14-24).

With respect to the recitation "wherein an α/β microstructure or composite material is formed" in claim 21, the Examiner notes that Kusano et al. ('369) discloses processing the same alloy in the same or a substantially similar manner. Therefore, the

Art Unit: 1793

formation of an α/β microstructure or composite material would be expected. MPEP 2112.01 I.

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Serfozo et al. (US 4,055,975) or Kusano et al. (US 6,077,369) with evidence from the ASM Handbook Volume 2.

In regards to claim 18, Serfozo et al. ('975) or Kusano et al. ('369) disclose the processing of Ti-6Al-4V alloys as described above, but Serfozo et al. ('975) and Kusano et al. ('369) are silent with regard to the presence of hafnium in the alloys.

The ASM Handbook Volume 2 discloses that hafnium would be present in titanium at a level of 0.25 ppm (pg. 1096, Table 2).

Therefore, it would be expected that in the Ti-6Al-4V alloys, as disclosed by Kusano et al. ('369) or Serfozo et al. ('975), hafnium would be present in an amount of 0.25 ppm, as disclosed by the ASM Handbook Volume 2 because the ASM Handbook Volume 2 discloses that hafnium would be present at such impurity levels (pg. 1096, Table 2).

Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Jelley (US 2,474,631).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jessee Roe whose telephone number is (571) 272-5938. The examiner can normally be reached on Monday-Friday 7:30 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Roy V. King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/John P. Sheehan/
Primary Examiner, Art Unit 1793

JR